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Tuberculin Testing

By

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Tuberculin testing is a subject of great importance to us as a profession. Up to a point we possess considerable knowledge regarding tuberculosis—the aetiology, the mode of infection and the symptoms—but that knowledge is not of very recent discovery and we have made comparatively little progress since the days of Koch. No spectacular advances in treatment or means of prevention have been made during this century. Methods of vaccination are still in the experimental stage and frankly, as a profession all we can offer to the farming community is a slaughter policy, *i.e.*, identification of infected animals and their removal from the herd. Some authorities query the wisdom of this policy and suggest, *inter alia*, that in the long run it will result in a highly susceptible race of cattle. To carry out this policy of eradication it is necessary to have a reliable means of detecting infected animals. Jenner was the first scientist to pay attention to the question of hypersensitivity in his inoculations against smallpox. His work was largely forgotten until the time of Koch. Koch observed the reaction in infected animals to the injection of tuberculin and recorded the tuberculin type of hypersensitivity or delayed reaction. It is interesting to pause for a minute and reflect that this reaction is not due to some poisonous principle injected—no effect is produced in the non-infected animal, even if relatively big doses are injected; it is due to some change brought about in the animal as the result of the invasion of the tissues by the tubercle bacillus. Koch at first thought his injections of tuberculin would have markedly curative properties and his premature publication raised hopes all over the civilized world. Patients flocked to Germany. Some died on the way, others died coming back and the use of tuberculin has been gradually relegated to the position of a diagnostic agent.

To appreciate the tuberculin test one requires to study how it works.

When the tubercle bacillus invades the body certain products result from the growth and breakdown of the bacilli. The body response is to produce agents, or anti-bodies if you like, to neutralize these products. These anti-bodies probably get into the circulation, but there is no very definite evidence that this is so. They may be present in such a state of dilution or the methods of detection are so clumsy that so far they have not been effectively demonstrated. Sooner or later these anti-bodies appear to become fixed to the tissue cells—which tissue cells is a matter of speculation at the moment, but it is believed that the lymphocyte with its globulin attachment may be involved. The body is now in the hypersensitive state and the tuberculin type of reaction appears on the introduction of the antigen. Strictly speaking, the antigen should be the sensitizing agent, but although the reaction develops on the introduction of tuberculin, the tuberculin is not of itself capable of sensitizing the body and is not therefore in the strictest sense of the term an antigen. It may, however, be regarded as an antigen in that it provokes the desired reaction and also in that it can be used without difficulty to desensitize the body and lead to the disappearance of the reaction.

When tuberculin is injected into the sensitized body what happens? We believe that a reaction occurs between the anti-bodies and the tuberculin as the result of which toxic products are formed, *e.g.*, histamine-like substances, and it is the effects of these toxic substances in the body which lead to the development of the so-called tuberculin type of reaction.

If we take the intradermal type of reaction with which we are all familiar, the first thing that happens when we inject tuberculin into the sensitized animal is that capillary dilatation occurs at the site of injection and an outpouring of fluid and cells. Leucocytes, mainly polymorphonuclear leucocytes, collect at the site in the very early stages, but in the later stages mononuclear leucocytes predominate. In the early stages the reaction may not be visible macroscopically, but it gradually increases, reaching a maximum, perhaps, at 72 hours. The swelling when it reaches its peak is firm and tense and as resolution commences it takes on the diffuse character. In cases of very severe reaction cell death occurs and giant cells may ultimately be found at the site.

The time at which the reaction reaches its peak is variable; it may come early, *e.g.*, at the 48th hour, or even as late as seven days. Thus in examining a series of animals various stages of the reaction may be seen at one time and this may lead to some confusion; some animals may not have reached the peak of their reaction, others may present firm tense swellings and others again may have reached the stage of diffusion.

The tuberculin used in the early days of testing was markedly different from that used to-day. It was prepared by growing the bacilli on a glycerine broth medium; when a satisfactory growth was achieved the medium was steamed and filtered. Ultimately it contained 50 per cent. of glycerine, constituents of the broth used, as well as the products of growth and disintegration of the bacilli. When this material was injected allowance was made for a certain amount of local reaction and much reliance was placed on pain and diffuseness and even heat.

Various improvements have been made in the method of preparation and to-day the preparation in common use in this country is a purified protein derivative known as P.P.D. This preparation has eliminated many of the non-specific features of the old glycerine tuberculin, but its introduction has by no means solved the problem of the tuberculin test.

The tuberculin test is a biological test and as such is subject to certain limitations. The intradermal test is not like a penny in the slot machine, as at one time it was hoped it would be. One can certainly inject the tuberculin, but certain factors may arise or be present which will affect the result.

If we assume that the tuberculin reaction is an anti-body-antigen type of reaction—and, as has been indicated to-day, there is some evidence to support that theory—then a moment's reflection will show that under certain circumstances the test cannot succeed:

(1) In a case of recent infection, sufficient anti-body may not have been formed to give a macroscopic result.

(2) Lesions may be in an 'active' state, producing antigen which may have neutralized the anti-bodies present, so that when tuberculin is introduced there is nothing for it to react with. We know this occurs particularly in advanced cases, but it also occurs in early phases of the disease. It is a form of auto-desensitization and we have reproduced this desensitization artificially by injecting tuberculin.

The amount of anti-body present varies from animal to animal; this is obvious from the varying size of the reaction. In some animals the reaction may be small, in others it may be relatively very great. We have additional proof in that it requires varying amounts of tuberculin to desensitize different animals, *e.g.*, we have desensitized some animals with 1 mg. of P.P.D., while other animals have required ten times that dose or more. The hypersensitive state has no relation to the extent of the disease.

Again, too, one occasionally finds at *post-mortem* examination one or two old encapsuled lesions, containing viable tubercle bacilli, in animals which have shown no macroscopic reaction to the injection of tuberculin. In these cases the anti-body response may have disappeared owing to the fact that repeated doses of antigen may not have been forthcoming to stimulate the fresh production of anti-bodies: this is waning of hypersensitivity. One can also visualize an animal in which the antigen anti-body response is nearly balancing or is balanced; the result is that no macroscopic reaction to tuberculin occurs.

I should like to refer to the desensitization which may occur at parturition. Kerr in his work on Trichomoniasis noted that the skin reaction disappeared at parturition, but that anti-bodies were present in the colostrum and if the calf was fed the colo-

* Presented to the Lancashire Division, N.V.M.A., at Preston on April 23rd, 1947.

strum during the first 24 hours after parturition, these anti-bodies were absorbed into its circulation. This resulted within a matter of hours in a positive blood reaction, and in a matter of days anti-body appeared in the skin and the calf developed a positive skin reaction in contrast to the fact that its dam had lost hers. These findings suggested to us that something similar might occur in relation to the tuberculin reaction.

Mr. J. S. Ogg, M.R.C.V.S., has very kindly made available to me some recent figures of the results of tuberculin tests in newly calved cows.

There were 50 cows in this series.

Ten cows were non reactors.

Twenty-eight cows were mammalian reactors.

Seven cows were non-specific reactors.

Five cows had been artificially sensitized: two with heat-killed bovine organisms; one with heat-killed avian organisms; two with B.C.G. vaccine.

The 28 reacting cows were tested several weeks before parturition and all were strongly positive. They were retested immediately after calving and 14 of them passed the intradermal test. Five more of them were returned as non-specific reactors on the official interpretation of the comparative tuberculin test and in the remaining nine the sensitivity was markedly reduced. In the case of the seven non-specific reactors three were negative to the intradermal test after parturition, two showed a reduced reaction and two animals were not affected.

In the case of the animals artificially sensitized one in the bovine heat-killed organisms group became negative and the other one showed a non-specific reaction.

The avian sensitized animal was not affected and in the case of the two B.C.G. sensitized animals, one became negative to the test and the other became a non-specific reactor.

The reaction returned to all the animals in from four to six weeks with the exception of one non-specific reactor.

Thirteen of the calves were tested about ten days after birth. Three calves showed evidence of skin sensitivity and two others gave a doubtful reaction. This passive sensitivity waned and had disappeared in about six weeks.

The colostrum was tested for the presence of anti-bodies, using a precipitin test. Positive evidence regarding the presence of anti-body was found in the colostrum of the mammalian reacting cows but not in the ten non-reactors and not in the avian reactors.

These are rather interesting observations: the loss of sensitivity at parturition, the transference of a passive skin sensitivity to calves *via* the colostrum, and the evidence of a precipitin in the colostrum all support the antigen anti-body theory of the tuberculin test reaction.

The question of the false positive as opposed to the false negative also requires consideration. The problem of the non-specific reactor has become a very serious one in this country. It is a shattering experience to go to a herd, believed clean, and find 5 or 10 per cent. of reactors or even more, but when we commence slaughtering and find no lesions the results are even more disturbing. It is now well recognized that other acid-fast organisms can induce anti-body formation in the bovine which will react with the mammalian tuberculin in common use. Quite a number of organisms have been suggested by various workers, but the so-called "skin tuberculosis" (it is a pity this term was ever used), the avian infection and the Johne's bacillus appear to be the most serious, and of these three the skin acid-fast infection is easily the greatest problem. This group does not exhaust the group of sensitizing bacteria or substances.

Variation in the reactivity of the skin.—Occasionally one meets an animal in which there are areas of skin which show different degrees of sensitivity. This phenomenon has been brought to our notice by two practitioners.

It has been suggested that an acute febrile attack may impede the development of the reaction. It is well known that in old age the power of the tissues to react may be diminished, but this is not likely to be a serious problem to us. Other factors may operate, but these are probably the more important ones.

Artificial desensitization has been referred to already; it is well known that unscrupulous persons could abolish temporarily the thermal reaction by using large doses of tuberculin. The intradermal reaction can also be dealt with similarly and this factor can be guarded against only by limiting the manufacture of tuberculin to certain institutions and confining its sale strictly to members of the veterinary and medical professions.

The Tuberculin Tests

I do not propose to spend much time in describing the systems of tuberculin testing in common use.

The subcutaneous test was used in this country for many years and the late Sir John M'Fadyean strongly advocated this test in preference to the double intradermal test.

The double intradermal test, however, quickly came into popular use. The technique of double intradermal testing is well known, but it is difficult to understand why the first dose was called the sensitizing dose and the 48-hour injection the reacting dose. The first criticism is that, so far, no one has succeeded in sensitizing an animal to any other antigen in such a short period as 48 hours. The second point is that if the antigen anti-body theory is correct, then on theoretical grounds, a second injection at 48 hours serves no useful purpose. The use of the second injection was discontinued in Northern Ireland some years ago and in Great Britain large scale experiments have shown that the single intradermal is equally as effective as the double test, and the single intradermal comparative test is coming into use as the official test.

The comparative test, using avian tuberculin as well as mammalian, was introduced to combat the serious problem of the non-specific reactor referred to. This is an excellent test in the self-contained herd where one possesses a good testing history, and we have found it so in such herds. We have found, however, in herds being tested for the first time, that it has definite limitations. It has also not given very satisfactory results in the testing of animals passing through Belfast abattoir. In Northern Ireland there is a considerable trade in newly calved cows sold subject to passing the tuberculin test; so many of these cows failed at subsequent tests that the owners considered that the Ministry's test was much stiffer than their own veterinary surgeons', and I must confess that on occasion we questioned the ability of the practitioner to carry out the test. The desensitization which occurs at parturition provides us with the explanation. In fact many dealers had "tumbled to the fact" that immediately after calving was a good time to have a cow tested.

During the course of our experiments on desensitization we had intended that we should test a number of animals in the same site at weekly intervals to note if a marked drop in sensitivity occurred. Frankly, it seemed perfectly reasonable that if the antigen anti-body theory was correct, the anti-body present in the site should be quickly exhausted. It was with some surprise, however, that we noted that in the first few animals tested, the site instead of being desensitized appeared to have developed an increased sensitivity. This point was followed up and we were so impressed with the phenomenon that we decided to carry out the test on a series of animals passing through the abattoir. I may say here that we were not the first people to observe this phenomenon. It was also noted by Buxton and Glover, but was rediscovered by us quite independently.

We have already published the results of the first series of 300 animals tested. I will recapitulate them.

The single intradermal test gave 183 negative results; of these, 17 were found showing lesions of tuberculosis at *post-mortem* examination. Of 90 animals returned as positive or failing the test, 29 failed to show lesions at *post-mortem*; that is a total error of 46 or a percentage error of 15·3. The single intradermal comparative test gave a negative finding in 212 animals, but 27 of these showed lesions at *post-mortem*. In 61 positive results no lesions were found in ten animals or a total error of 37, or expressed as a percentage, the figure is 12·3. In both tests there were 27 doubtful results or a percentage of nine. Of the animals giving these doubtful results 14 showed lesions and 13 were negative at *post-mortem*. The Stormont Test, as we have named the new test to distinguish it from the original double intradermal, gave a very favourable result.

The Stormont Test

The test is carried out as follows:

A site in the middle of the neck is prepared and clipped in the usual way; 0·1 c.c. of mammalian P.P.D. tuberculin of the 1·5 mg. per c.c. potency is injected. Seven days later the site of injection is measured, reinjected and 24 hours later it is re-measured. If there is an increase in measurement of 5 mm. or more we consider this a positive result. On the basis of this interpretation the Stormont Test showed five errors, two negative which showed lesions and three positive which showed no lesions, or a percentage error of 1·7.

I have already dealt with the desensitization which occurs after parturition: it is an important point that the Stormont Test detected all these animals.

These results are certainly encouraging, but we would feel much happier if a straightforward test on similar lines was carried out on a large series of animals by independent observers.

We are conscious that the test is open to criticism. No margin is provided for doubtful results. Possibly as experience increases a doubtful category may be instituted. The standard of 5 mm. is a very arbitrary one. It demands meticulous care in measurement. The ordinary compass-like calipers are not suitable, as accurate measurements cannot be made with these. We use an engineer's micro-caliper with lugs fitted. It is possible to measure very consistently with these.

In this series of tests avian injections were made as well as the mammalian injection. We are just wondering as the result of some experiments if this was not a very useful thing to do. Assuming that our antigen anti-body theory is correct, we can only assume that the initial injection of tuberculin attracted additional anti-bodies to the site. This is one theory to explain the result. If this is ultimately found tenable, it may be that the use of the avian tuberculin by attracting the avian anti-bodies played a useful part in reducing the non-specific reaction. We have to explore this point.

Since our results were published we have been studying the effects of testing at varying time intervals. The outside time for this increased sensitivity appeared to be about the 12th day and the earliest time for its appearance the fifth day. The seventh day appeared to give the most discrimination. Again, too, the question of the strength of tuberculin has been under study: more dilute tuberculins have not given as good results as the standard Weybridge tuberculin of the 1·5 mg. per ml. strength. These and other points are still under examination. We have yet to study the effects of a weak initial tuberculin followed by a tuberculin of double potency. We have also to study and compare a single mammalian injection with the avian and mammalian used in the form of a comparative Stormont Test. All these things take time : it is a slow business. It should be stressed that the Stormont Test is not very satisfactory in testing animals affected with the so-called skin tuberculosis. Further experiments may provide a clue to this problem.

Incidentally, I should like to mention that there is a very close liaison between Stormont and Weybridge and that we receive much valuable advice from Professor Dalling.

[Dr. Lamont, who had introduced his paper by expressing his great appreciation of the honour of being asked to address the Lancashire Veterinary Medical Association, concluded by apologizing for the rather sketchy nature of his talk. The graphs on the wall with their legends were self explanatory, and he trusted he had provided his hearers with material for a good discussion.]

FOOD INFESTATION: ORGANIZATION FOR RODENT CONTROL

The need for each country to have a single organization for rodent control, employing trained workers, was emphasized in a resolution submitted by the Rodent Control Committee, which was unanimously adopted by the recent conference of the World Food and Agriculture Organization in London.

At least 10 per cent. of the overall food losses is caused by infestation of insects, rodents, and fungi, and in some countries, it was stated, the organization for prevention and control of infestation is quite inadequate.

Resolutions emphasizing the urgency of the food infestation problem, the need for further research, and the "imperative necessity for appropriate governmental action" are to be considered at the next plenary conference of the F.A.O. at Geneva.

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Weekly Wisdom

Modern ideologists definitely repudiate moderation; they are dissatisfied unless they are actively assailing somebody or something.—Hugh Stafford. (1947.) "On Toleration."

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During the last two years remarkable progress has been made in Ulster's food canning industry, which now represents a very considerable proportion of the United Kingdom production. In the financial year 1946-47 the value of the Ulster output was more than £1,000,000. The Research Division of the Ministry of Agriculture supervises all these canned products so as to ensure the maintenance of their high reputation, which has been built up on quality alone.—*Ulster Commentary.*

Pasteurellosis in Swine

By

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Reports of pasteurella infection in swine are comparatively uncommon in Great Britain. Such infections are usually sporadic in nature and seldom show much tendency to spread from the original focus. In view of the comparative rarity of the disease, the circumstances surrounding any outbreak are of more than ordinary interest. An opportunity recently occurred affording fairly close observation of an outbreak of pasteurellosis in pigs in Northern Ireland.

During the very cold weather in February, 1947, an investigation was conducted to find the cause of an outbreak of coughing in a pen of pigs five to six months old. A *post-mortem* examination was carried out in one of the affected pigs. The most prominent abnormality seen was an apical pneumonia with consolidation of most of the apical lobes. In the consolidated area there were small foci, about the size of small shot, containing thickish pus. There was excess fluid in the pericardium and some bronchitis. The pleura was free from macroscopic change and no other abnormality was seen in the rest of the carcase.

Cultures were made from the liver, lung and heart blood on trypsin agar slopes and on cooked blood agar plates. A pure culture was found, after overnight incubation, in the blood agar plate sown from the lungs. All the other cultures were negative. The pure culture was a gram-negative ovoid rod form which showed some tendency towards bipolar staining and a tentative diagnosis of chronic pasteurellosis was made. The remainder of the pigs in the pen (pen No. 1) continued to cough but there was little or no interference with thriving and the appetite was maintained.

In pen No. 2, immediately adjoining pen No. 1, there were eight pigs about six months old and all had been thriving and putting on weight satisfactorily. About a week after the diagnosis of pasteurellosis in pen No. 1, one pig was noticed blowing badly. This pig was the largest in the pen. It died in about six hours after evidence of dyspnoea was seen.

Post-mortem examination showed marked purplish discoloration of the skin. There was an acute pleuro-pneumonia with a yellowish gelatinous exudate in the pleural cavity. There were pleural adhesions between the apical border of the lungs and the costal pleural surface. The trachea was full of a frothy exudate and there was a marked bronchitis. The bronchial lymph glands were enlarged, oedematous and dark red in colour. Pharyngitis was not seen. The lungs showed all the features usually associated with acute pasteurella infection. Positive cultures were obtained from the blood and lungs.

A few days later a second pig in pen No. 2 was seen blowing badly and off its food. There were signs of diarrhoea. This pig died about eight hours after the onset of dyspnoea. The *post-mortem* findings were essentially similar to those of the other pig which died with, in addition, a diffuse gastro-enteritis. During the next few days two more pigs in pen No. 2 died and all showed evidence of pasteurella pneumonia to a varying extent. In all a bipolar organism, which killed a rabbit within 18 hours on subcutaneous inoculation, was found. Temperatures up to 105° F. were recorded in these pigs. In one case when the temperature began to rise "Soluthiazole" was given subcutaneously in doses of 40 c.c. The pig died within eight hours just after the second injection of the "Soluthiazole."

In pen No. 3 adjoining pen No. 2 there were eight pigs about five and a half months old. Coughing among these pigs began about the time of the first death in pen No. 2. There was no loss of appetite and no deaths took place and in about ten days the pigs were apparently normal again.

All the survivors were examined at the time of slaughter and the results are summarized below.

The organism isolated showed all the usual features of the pasteurella group. It did not grow except in the presence of blood and the bipolar staining phenomenon could be most satisfactorily demonstrated in blood films from the rabbit killed by subcutaneous inoculation of emulsions from the growth on blood agar plates. In blood films from guinea-pigs killed by inoculation of the organisms the bipolar staining was not so distinctive. Staining by Leishman's stain was most satisfactory in showing the bipolar phenomenon. Dilute carbol fuschin was not satisfactory in this respect, and prolonged staining (20 minutes) with Loeffler's methylene blue was necessary for good results.

On blood agar plates a heavy growth appeared after 24 hours' incubation. A number of preliminary isolations was made on ordinary trypsin agar slopes but subculture from these to a second

trypsin slope was always negative, though subculture to a blood agar plate from the original trypsin slope was successful. It appears that blood was essential for the satisfactory growth of the organism and the successful isolation on trypsin slopes from the heart blood and the liver was due to sufficient blood being transferred with the inoculum to the slope to establish the growth; 1:30,000 brilliant green completely inhibited the organism. Over a period of four months the organism was subcultured 15 times on blood agar plates and it still maintained its virulence for both the rabbit and guinea-pig. Attempts were made to set up the infection in three young pigs about three months old; 1 c.c. suspension of the organism was given intraperitoneally to one, subcutaneously to a second and 10 c.c. suspension inoculated intranasally in the third. No clinical symptoms developed in any of these pigs.

It is regretted that direct transmission was not attempted with extracts from affected lungs but, owing to circumstances beyond our control, this was not possible.

Blood serum from four pigs in pen No. 2 which survived was tested against a formalized whole culture of the organism but no agglutination occurred in a one in ten dilution. Biochemical reactions of eleven strains of the organism were studied but these were so variable as to be of no practical value.

All 24 pigs were examined *post-mortem* and the following is a summary of the findings:—

Pen No. 1 containing eight pigs. This is the pen where the disease was first diagnosed. No deaths occurred in this pen. In three pigs there was apical pneumonia with consolidation. In one there was evidence of an earlier pneumonia having a patchy distribution throughout the lung substance. In two pigs there was apical consolidation with necrotic nodules containing thickish pus. In one pig there were several nodules in the liver substance similar to those found in the lung, and a bipolar organism was found on blood agar plates inoculated from the pus. In this pig the lungs were macroscopically normal and culture from the lungs and liver was negative. One pig in this pen showed no abnormality at *post-mortem* examination and culture yielded nothing of pathological significance.

In pen No. 2 four pigs died after a short period of illness with loss of appetite, elevated temperature and marked dyspnoea. Death occurred within a few hours of the onset of the laboured breathing. The appearance of the lungs in these cases was characteristic. There was a diffuse congestion with scattered areas of red hepatization and pronounced oedema. The apical and cardiac lobes were involved and the interlobular septa were infiltrated with a yellowish fluid. An extensive fibrinous pleurisy with exudation into the pleural space was a marked feature. The thoracic lymph glands were oedematous and haemorrhagic. A varying degree of gastritis and enteritis was found in three of the pigs which died. These pigs showed some diarrhoea before death. Carcase lymph glands were not involved and there were no changes in the pharynx. One pig in this pen showed some apical consolidation. In one there was evidence of an earlier patchy pneumonia as well as apical consolidation and one showed apical consolidation with nodules characteristic of chronic pasteurellosis. The four pigs which died in this pen were in the best condition and had been thriving above average for the three pens.

Pen No. 3 also contained eight pigs. No pigs died in this pen and symptoms of coughing were the first signs of illness seen.

Three pigs showed consolidation of the apical lobes and in one of these there were pleural adhesions over the consolidated area. In two pigs there was evidence of an earlier pneumonia with a patchy distribution and in one of these there were several nodules in the liver substance containing thickish pus. Cultures from these nodules in this case were sterile. One pig showed the usual pasteurella lung nodules and in two there was no apparent change in the lungs nor was any organism found in cultures. Several pigs in this pen showed evidence of diarrhoea during the period when coughing symptoms were exhibited.

Attempts were made to isolate the virus of swine influenza from the lungs of some of these pigs. Gauze filtrates from affected lungs were inoculated intranasally into mice without result. Attempts to enhance the virulence of any virus that may have been present by rapid passage through mice were equally unsuccessful. No other organism of pathological significance was found and attempts to cultivate *Haemophilus influenzae suis* on cooked blood agar plates were uniformly negative. No confirmed outbreaks of swine fever have occurred in Northern Ireland since 1945.

DISCUSSION

Pasteurellosis in swine as a primary disease entity has in the past been the subject of much discussion and speculation. In Europe pasteurellosis, or swine plague (schweine seuche) was recognized as a distinct hazard among pig herds and capable of spreading from pig to pig and from herd to herd. In Germany in 1940 swine plague was removed from the official list of transmissible diseases. It was realized that the old term "schweine seuche" covered more than one disease entity, that *P. suiseptica* was frequently found complicating swine fever outbreaks, and that sporadic cases of *P. suiseptica* infection were frequently secondary to some devitalizing circumstance such as injury or chill.

In the U.S.A. up to the discovery of the virus of swine fever in that country in 1903, pasteurellosis or haemorrhagic septicaemia was regarded as a common and serious disease of pigs. Since that time there has been an increasing tendency to regard pasteurella infection as a purely secondary infection associated with the virus of swine fever and more recently with the virus of swine influenza. Aitken (1940) goes even further. Referring to the Corn Belt area he states: "Fifty years ago the term swine plague clothed a robust disease but with the differentiating first of hog cholera (swine fever) and of many less specific ailments the term appears ridiculously like a ponderous shroud covering only a cadaverous remnant. We hope that it may soon be revised, restricted or abandoned."

In Canada Schofield & Ingle have shown that pasteurellosis as a primary disease entity does exist in that country. At the time of their report (1940) swine fever occurred only in sporadic outbreaks on the U.S. border and so this complicating factor did not occur in the cases described by them. These authors recognized four types of the disease:

1. *The septicaemic form* which commonly attacks sucking pigs when a few days old, producing subcutaneous oedema (particularly of the cervical region), congestion and oedema of the visceral and carcase lymph glands and congestion and oedema of the lungs. Some gastritis and enteritis may be present. *P. suiseptica*, haemolytic streptococci and colon bacilli were isolated from such cases. In three cases vitamin A assays of the sows' milk showed the content to be very low, from 20 to 50 units per 100 c.c. The possible significance of this requires further investigation.

2. *Acute Lobar Pneumonia.*—In over 50 per cent. of cases of this condition investigated at the Ontario Veterinary College by the authors, *P. suiseptica* was isolated in pure culture or associated with haemolytic streptococci and occasionally with *Haemophilus suis*, and they were satisfied that the pneumonia was caused by the pasteurella. The appearance of the lungs in these cases was typical of a pasteurella pneumonia. Enteritis and gastritis were frequently present. This condition was most commonly found in half-grown pigs.

3. *The Enteric Form.*—A few cases of acute gastro-enteritis have been recorded unaccompanied by infection of any of the other organs.

4. *Chronic Pneumonia* with caseous areas, and patches of pleurisy and adhesions, is commonly seen in mature pigs as a sequel to the so-called "shipping fever."

In the present outbreak most of the cases would fall into the acute Lobar Pneumonia and Chronic Pneumonia groups. So far the author has been unable to trace any reference to nodules in the liver associated with *P. suiseptica*.

The standard of hygiene and the husbandry on the premises where the present outbreak occurred were good. No new pigs had been introduced for more than two years previously and there was no evidence that swine influenza existed on the premises. Attempts to isolate this virus from the lungs of pigs in this outbreak were negative. There had been no coughing or any signs of disease in any of the pigs up to the present trouble.

How and why this infection became manifest is a matter of conjecture. It may be that some of the pigs in pen No. 1 were carriers and as a result of the severe weather the organism became pathogenic, due to reduced vitality on the part of the host. Thermograph readings in pen No. 1 during the course of the disease showed that the inside temperature varied from 40° F. to 48° F. and that the relative humidity was between 85 and 92 per cent. During this time the outside temperatures remained well below freezing point. It is tempting to postulate that the prolonged period of cold weather and the presence of "carrier" pigs precipitated this outbreak.

Pens 1, 2 and 3 were in one block and each was composed of an inside house with insulated roof and an outside pen. There was a wall about 4 in. high between the outside runs. The houses were completely separate. The infection did apparently become more virulent in pen No. 2 in that four deaths were attributed to the effects of the organism, though it is noteworthy that the pigs which died were those in the best condition and in which one would expect resistance to be high. One pig in particular in this pen was much smaller than the rest though of the same age and in such one would expect the adverse external circumstances to react more severely, yet it merely coughed off and on for a few days and recovered. It showed apical consolidation and some pleural adhesions at *post-mortem* examination.

Though the weather conditions continued very severe the viru-

lence of the infection declined and in pen No. 3 only evidence of the chronic type of pasteurellosis was seen. There were eight other pigs on the premises housed about ten yards from pens Nos. 1, 2 and 3 and at no time did any signs of disease appear in them.

Organisms exhibiting bipolar staining have frequently been isolated from apparently healthy pigs, though whether these in all cases were genuine pasteurella has not been proved. The actual method of spread of the disease has never been satisfactorily elucidated. Some workers hold that outbreaks occur as a result of adverse conditions operating in the presence of a carrier and that virulence is increased by passage and spread results from contact—by inhalation or ingestion, by animals whose resistance is normal—with virulent organisms. In such circumstances one would expect that once the virulence was enhanced the disease would continue to show severe symptoms among susceptible animals and that experimental transfer of infection would be a simple matter.

Schofield & Ingle attempted to transmit swine pasteurellosis by feeding, intratracheally, intranasally, intracardiacally and intrapulmonarily—and only by the last route did anything like typical symptoms of pasteurellosis appear, though in some cases rises of temperature occurred in the experimental animals. In the present outbreak a small number of transmissions intraperitoneally, subcutaneously and intranasally failed to produce clinical symptoms.

On the other hand, the carrier state may be fairly common in pigs and the appearance or non-appearance of pasteurellosis may be a function of the carrier's reaction to adverse circumstances. This would account for some animals (*viz.*, the non-carriers) remaining unaffected even in the presence of acute disease. This seems to fit in with field experience in that pasteurella infection often occurs after pigs have been exposed to adverse conditions during transport, *e.g.*, "shipping fever" in U.S.A., and that the disease shows little tendency to spread to pigs not so exposed. In such circumstances, however, one would expect the disease to be much more common than it is.

Braude reported an outbreak of coughing of uncertain etiology in pigs in England. *Post-mortem* findings were rather suggestive of a pasteurella infection and *P. suiseptica* was found in a number of cases. Attempts to isolate swine influenza virus were not successful. Treatment by "Soluthiazole" and "Sulphapyridine" effectively controlled the condition. The symptoms described by Braude resemble those shown by some of the pigs in the present outbreak, though in most cases the coughing only persisted for a few days and "Soluthiazole" did not seem to have any therapeutic action in one pig which was treated. Braude does not implicate *P. suiseptica* as the primary cause of the coughing in the cases he describes.

Creasey & Noble describe an outbreak, which they considered was due to *P. suiseptica*, in which typical thoracic lesions are described as well as enteritis. In addition, there were infarcts in the spleen and some pharyngitis and laryngitis. Bipolar organisms were seen in smears from various organs. The pigs were treated with "Soluseptasine" and "Suisan" (a polyvalent serum containing a mixed vaccine prepared from streptococci, *P. suiseptica* and coli paratyphoid bacilli). No more deaths took place after treatment.

In view of the sporadic nature of the disease caution is necessary in assessing the value of any system of therapy in pasteurellosis. In the present outbreak where treatment was not attempted (except in the case of one animal) only four died out of 24 exposed to infection. *In vitro* experiments showed "Soluthiazole" to have very little value in inhibiting the strain of *P. suiseptica* in the present outbreak. Penicillin had about two and a half times the value of "Soluthiazole" (as measured by the zone of inhibition on blood agar plates).

Bearing in mind the experience of Schofield & Ingle with cases of acute gastro-enteritis associated with *Pasteurella suiseptica*, it is interesting to note that practitioners in Northern Ireland have reported outbreaks of acute gastro-enteritis in fattening pigs, the cause of which could not be satisfactorily ascertained. The epidemiological picture recalls that of pasteurellosis with its sudden appearance, patchy spread through the affected herd and its equally sudden subsidence and disappearance. Mortality in these cases has been fairly high. The lesions have been confined to the gastro-intestinal tract.

In a private communication P. L. Brown (1945) recorded anthrax-like swellings in the throat of pigs showing a temperature of 106° to 107° F. Anthrax was negatived and a bipolar organism was found in smears from the swellings. There were no lung lesions. This condition may be compared with the septicaemic form described by Schofield & Ingle.

Summary

An outbreak of disease in pigs attributed to *Pasteurella suiseptica* is described.

The status of pasteurellosis as a primary disease entity in pigs is discussed.

An Account of Infectious Venereal Granuloma in the Greyhound

By

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Waterford

During recent years, with the increased breeding activities among greyhounds, the prevalence[1] of infectious venereal granuloma in these canines has increased in Ireland.

The disease is readily transmissible, apparently being due to virus. The latter belief was held by the investigators reporting to the Imperial Cancer Research Fund (1905), and subsequent observations upon the disease have strengthened the above opinion. Infection occurs during coitus, either the male or female having macroscopic lesions on their external genitals. Contamination can also occur in the case of animals licking the external genitals of infected cases and then licking their own organs. Occurrence of the disease in whole litters of young puppies with an infected dam has been noticed. The virus specifically attacks the external genitals, excluding the skin of the lips of the vulva and the skin of the scrotum, and although extensive licking of the affected parts occurs, infection of the buccal or nasal mucosa has not been noted. In the male, any part of the penis may show lesions, but most commonly the base. In the female, any part of the vulva or vagina may become affected but most commonly the vulvar mucous membrane, the fossa clitoridis and clitoris. Experimental transmission of the disease has been carried out by the author using submucous saline injections containing suspensions of tumour cells; the experiments showed that all common canine breeds are susceptible to the disease. From time of infection-exposure to macroscopic appearance of the lesions, the incubation period would appear to be not less than three, and not more than six, weeks. Appearance of the disease in bitches is usually noticed after whelping, but may be seen earlier when a granuloma appears near the vulvar commissure and is visible externally. In the dog it is noted earlier, due to the presence of bleeding and to observation of his protruded penis by the stud attendant.

Diagnosis

In the case of the dog, this is simple, the animal being placed upon his side and the penis fully exposed, whereupon both penis and sheath are carefully examined, no area of the mucous membrane passing unscrutinized. It is necessary to differentiate between a normal spotty granular appearance of the base of the penis and the early stage of venereal disease. Both of these conditions appear alike, but when the finger is rubbed over a suspicious area, a spotty condition due to venereal disease will readily bleed, thus removing doubt as to the abnormality of the condition. The more established the disease, the easier the diagnosis, as in the case of large separate or multiple tumours.

In both dog and bitch two types of the disease are seen; one I would classify as being decidedly more benign than the other. One meets the condition of somewhat pedunculated tumours occurring separately or in clumps. These latter are relatively slow growing and easily dealt with, occupying in root size area, only a small region of mucous membrane and accompanied by little or no submucous inflammation. The other type of venereal disease consists of a spreading sessile growth, involving much mucous membrane, showing more progress of growth and causing adhesive inflammatory infiltration of the submucosa which renders surgical treatment more difficult.

In the bitch diagnosis may be easy where bleeding, apart from heat, has been noticed and eversion of the vulvar lips exposes the raw tumour or tumours. On the other hand, where the lesion is in the anterior vagina accurate diagnosis will require the use of a speculum and a strong beam of light. In many cases digital examination of the posterior vagina and vulva is sufficient to reveal disease; where one feels an abnormal swelling within and withdraws a bloody finger

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the deepest suspicions are justified and a speculum may be applied to clinch diagnosis. In some cases, however, the lesions are situated in the anterior vagina adjacent to the upper or lower fornix. The maxim therefore is always to use the best possible vaginascope and to leave no area of mucous membrane unexamined, working from within outwards during the examination. A small human "Coldlite" proctoscope is a good instrument and visibility can be much aided by using a human laryngeal speculum in conjunction with the former. Where there is reason to suspect infection, fortnightly examinations are necessary and sufficient to detect early-stage disease. Speaking generally, where infection is present in a not-too-advanced state, there is little interference with general health. As the condition becomes advanced, however, with the formation of extensive bulky granulomata which become ulcerated, bleeding, and infected secondarily by bacterial invaders, the combined symptoms of anaemia and toxaemia become apparent. The patient loses weight, assumes an anxious expression due to mechanical discomfort, and a stench from the decaying tumours is noted.

Microscopic.—Histologically, the venereal granuloma resembles a round-celled sarcoma[a]. It is believed by some observers that intracellular bodies exist, but confirmation is not available. The stroma present is better developed than in the well-known malignant round-cell sarcoma. The writer has noted encapsulation varying from incomplete, to complete in some cases. Section of the latter growths reveals an outer periphery of well-developed fibrous tissue, becoming more soft and sarcoma-like towards the centre where the cells are still embryonic fibroblasts in appearance.

Treatment

Treatment is, up to the present, entirely surgical. Procedure will depend upon the site of the lesions, type of infection and size of tumours. Surgery in all cases is performed under general anaesthesia, and in both dog and bitch, particularly where extensive excisions are necessary, regional submucous infiltration of the diseased area with a haemostatic agent such as procaine and thromboplastin is necessary, to control haemorrhage.

In the Dog.—Mild and medium cases of either the pedunculated or the sessile type of disease can be dealt with successfully at a single operation. Complete excision of the tumour is necessary. In penial operations one removes by means of a very sharp small-jawed scissors, a section of the parent mucous membrane leaving clean penial edges. In the case of pedunculated growths the tumour is clamped at its base in a wide-jawed haemostat, the tissues in the jaws of the forceps consisting of mucous membrane, which is incised at the penial side of the instrument. Close suturing with fine catgut of the loose gaping edges of mucous membrane is necessary, and must be carried out in penial operations. In the case of advanced disease with extensive sessile or cauliflower-like growths, the treatment is carried out in one, two or more, operations at fortnightly intervals. Where excision has been complete, recovery is 100 per cent. and permanent, and in no case (outside reinfection*) is regrowth noted. In some cases in the dog where sheath infection is extensive, division of the median raphé is necessary to complete the excisions; close suturing here, on an extensive scale, is not advisable on the grounds of subsequent sheath stenosis.

Post-operative treatment in the dog consists of painting the incisions with 1 per cent. gentian violet, subsequent dressing consisting of douching with a mild antiseptic such as 5 : 6 chloroxylenol and terpineol once daily, followed by injection of an oily sulpha salve. The dog should be kept under light sedation (bromides) for a few days after operation, under-fed and kept away altogether from contact with bitches. Healing time is much shortened in the absence of erection or sexual stimulus.

In the Bitch.—Treatment may vary from simple removal of early vulvar lesions, to a major operation or operations rendered necessary by presence of extensive disease in the middle or anterior vagina. A headlamp worn by the operator and use of narrow-bladed specula are invaluable instruments. For the successful removal of lesions situated from near the os to the posterior third of the vagina, division of the upper and lower vulvar commissures is necessary. In sectioning the upper commissure, a light incision passing through skin and mucous membrane only, is first made, the division of the lips being enlarged by a little tearing and blunt dissection; in this way the vulvar veins will be exposed and may be either ligatured or stretched as seems necessary. Deep incision into the substance of the upper vulvar commissure should be avoided, as apart from venous haemorrhage, arterial flow will result, creating difficulties at an early stage. The lower commissure is incised similarly through skin and mucous membrane, exposing the fossa clitoridis. The incised tissues are stretched. Apart from deep-seated lesions, disease of the fossa renders exposure necessary in order to dissect out infected mucous membrane, and simi-obliteration of the cavity follows this procedure. The incised vulvar lips, now of the nature of flaps, are seized, using vulsella forceps, and drawn apart by assistants. Lesions in the middle and posterior thirds of the vagina can now be inspected, seized and efficiently dealt with. The narrow-bladed speculum will be found necessary in order to deal with deep-seated tumours which may be seized and reseized with angular jawed forceps until a satisfactory grip is obtained when the growth is drawn out as much as possible before excision. At the latter stage it is a good plan to run in a couple of catgut strands through the mucous membrane-pedicle on the vaginal side of the forceps ready for tieing, following excision of the tumour. Various devices have been used to check haemorrhage following excision, such as an electrically heated loop of platinum wire used to excise the tumours, but my experience in this connection is that where tumours are extensive and deeply placed, one may do damage with cauteries giving rise to stenosis afterwards. The submucous injection of a haemostatic agent, together with either ligaturing or approximating incised mucous membrane and followed by a vaginal plug if necessary, will usually be found satisfactory after operation.

The approximation of internal incised edges by stitches calls for neat use of a small curved needle and a holder such as a human gall bladder needle holder. Of late I have found Singer's surgical stitcher to be very useful in placing deep-seated sutures. If, however, due to one difficulty or another, such as the bitch being very small, anterior vaginal incisions cannot be stitched, one need not worry, as with proper after care healing will be rapid and complete. If, when one has seized in the forceps jaws, an anterior vaginal lesion by its mucous membrane base, and the impossibility of stitching or ligature is feared, a strong-jawed suitably-shaped haemostat should be tightly applied on the vaginal side of its fellow already *in situ*, and left for a short while, then removed, and incision carried out through the now crushed tissues. Where stitching after excision is at all possible, the procedure should be carried out, particularly where opposing raw surfaces are present in the vagina. Following the vaginal operation the sectioned vulvar commissures are approximated with both deep and superficial sutures as seems necessary. Where extensive disease has been present in the vagina and/or vulva and a second operation is considered necessary at a later date to complete the excisions, it goes without saying that the lesions in the anterior and middle vagina should be dealt with at the first operation. Posterior and vulvar lesions will be removed at the second operation where reopening of the commissures may not be necessary. Where the type of lesion met with in a bitch is the semi-fibrous pedunculated tumour and where the latter is present even very extensively in the passage, total removal and cleaning of the vagina may be undertaken at the one operation. In the latter case the individual excisions, although perhaps involving a large number of pedunculated growths, do not give rise to any haemorrhage worth while as the amount of mucous membrane removed is small and almost in every case a single ligature is sufficient. Where extensive sessile growth is present, however, it is necessary to attack the disease in stages, usually two operations being necessary to complete the treatment.

Where an animal has been subjected to a long operation involving extensive excisions, it is desirable to administer saline transfusion before anaesthesia has passed off, and six hours later, or as seems necessary.

Post-operative Treatment.—This is most important in the case of the bitch, particularly where total approximation of the incised mucous membrane by stitches has not been possible, and where raw opposing surfaces exist in the vagina. The type of dressing, used twice daily, should consist of a sulphanilamide cream (10 per cent. sulpha with ol. morrhuae). A syringe with a long metal nozzle should be used, so that the greasy dressing will reach anterior incisions, thus keeping opposing raw areas from collateral adhesion with subsequent stenosis of the passage. Vaginal mucosa is a rapid healer and even following the most extensive operation, bi-daily treatment for ten days is sufficient. For a week following the operation a maintenance oral dose of sulpha drug is desirable. External commissural incisions should be dressed with mild tr. iodine.

Results

Except in the case of far advanced disease, where operative procedures have been extensive with possible stenosis, removal of venereal granuloma in the greyhound bitch is followed by excellent results, the surgical procedures when correctly carried out interfering neither with the health nor breeding ability of the animal. In a few cases where after-treatment left much to be desired, I found it necessary manually to break down collateral adhesions which had formed in the vagina.

* Not noted within twelve months after recovery from curative treatment of first original infection.

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Suggested Procedure for Adoption in Respect of Control of Venereal Disease in Greyhounds

A. Formation of a recognized panel of veterinarians, as Veterinary Examiners of greyhound stud dogs and bitches for venereal disease.

B. Members of the panel to be located where possible in the stud dog locality.

C. Selection of panel veterinarians to be carried out by a committee consisting of, for example, two or three noted veterinarians connected with greyhound practice and two or three senior officials of the Irish Coursing Club or similar governing body.

D. All greyhound bitches to be examined before service by a panel veterinarian.

E. Such examinations to take place as near to time of mating as possible; for preference, at the stud dog owner's premises, immediately before service.

F. *Stud Record Book.*—Alteration to be carried out in the present form of Certificate of Service and counterfoil of same in the book to allow entry of name of Veterinary Examiner of the bitch and number of the Examination Certificate with date of issue.

G. Special stereotype form of Examination Certificate to be drawn up, for issue to panel veterinarians.

H. Such Certificates for checking and recording purposes to be marked alphabetically in relation to examiner's name and numerically for continuity of issue.

I. Central record to be kept in connection with issue of veterinary examination certificate books to panel veterinarians; such record should be designed to afford a speedy reference check-up on the issue of any particular certificate by any particular veterinarian.

J. Failure on the part of a stud dog owner to register required particulars of a Veterinary Examination Certificate in respect of any one mating should lead to all or some of the following procedures:—

(i) Immediate tracing of the bitch and examination of same at stud dog owner's expense.

(ii) Examination of the stud dog at an interval of three weeks following the service in question, six weeks, nine weeks, and twelve weeks, following same.

(iii) Immediate withdrawal of the dog from stud following the service in question, the dog to be withheld from stud until procedure in J (ii) (above) has been carried out.

K. The Veterinary Examiner to keep duplicate Certificates in respect of each bitch examined; such certificate must mention name and particulars of bitch*, and the stud dog to which she is being brought, and where possible the date of mating.

L. Stud Record Books to be subject to monthly inspection by the Panel Veterinary Surgeon, when checking and comparing of Certificates is carried out.

M. The stud dog to be examined seasonally.

* Bitch's identity card to be produced by her owner and if necessary the markings to be noted in conjunction with certification.

HORSE SLAUGHTER PROTEST

At a recent meeting in London of the Council of the Shire Horse Society attention was called to the "serious situation" which had arisen through the indiscriminate slaughter of British horses for food, the statement being made that if the present rate of slaughter continues, in ten to 15 years there will be practically no horses left in the country.

It was asserted by one member that the agricultural horse population had declined by 20 per cent. in the last 13 years, from 550,000 to 430,000. (Note—official figures give the number of horses used for agricultural purposes in September, 1946, in England and Wales, as 452,000, as against 488,000 in September, 1945, and for the same period in Scotland the decrease was from 114,557 to 110,000.)

Assuming the working life of a horse to be ten years, it was pointed out that it would need 44,000 foals to be bred each year to prevent the drop in numbers increasing still further. In 1946, live foals numbered 16,000, less than one-third of the number required to maintain the figure given. At least 15 per cent. were killed for food.

The slaughter included a large number of breeding animals, and if that practice continued there would in the near future be no mares left to breed from.

As a matter of national concern, the Council agreed that a letter be sent to the Minister of Agriculture deprecating the indiscriminate slaughter of horses for food, and strongly emphasizing the effect it will have on the horse breeding industry of the country; and enquiring whether the Minister will use his influence and take steps to prevent this slaughter.

CLINICAL COMMUNICATION

Photosensitization

P. J. McCARROLL, M.R.C.V.S.

CARNDONAGH, CO. DONEGAL

Subject.—Six-year-old light roan cow.

History.—The cow was sold to a dealer in the market as a springing cow on April 4th. The dealer held the cow until she calved on April 17th and sold the cow and calf on April 18th. A few weeks later the cow was reported to be doing well.

On June 3rd, *i.e.*, about six weeks after calving, the vendor was notified that the cow was seriously ill, the purchaser alleging that a blister or other irritant dressing had been applied to her back.

Examination.—On July 4th, I examined the cow and found her in poor condition. Extensive lesions, in the form of large sloughs of skin, extended from the shoulders on either side to the root of the tail; the sloughed areas varied in size from that of a crown to that of a large plate, being raised at the edges. There was an exudate at the periphery of the sloughs which matted the surrounding hair. The ears were completely hairless and scaly on the upper surfaces. The head and eyelids were, in scattered areas, bare of hair and scaly, as were, in parts, the hind limbs to the hock. Over all the bare areas there was evidence of scab formation. The teats were slightly puffy and scaly.

The conjunctival mucous membrane was jaundiced; temperature was normal and the cow was eating and ruminating.

Subsequent questioning of the owner gave some idea of the nature of the disease at the time when it first became noticeable. He said that he first noticed the cow dull and not eating, then the back became swollen, over the areas which sloughed later; the cow was very tender and "yielded" on pressure; she walked very stiffly. The milk became dark, watery and foul smelling.

Fig. 1.—Showing extent of lesions on back.

(*Continued overleaf*)

Fig. 2.—Close-up of hind-quarters, showing lesions.

At the time of my first examination I could not find any clinical evidence of mastitis, the milk appearing quite normal.

On September 27th, I examined the cow again. The sloughed areas had been cast off, and hair had grown at the shoulders, but the loins were bare and almost in raw flesh. The outer surfaces of the ears were well covered with hair, but were still scaly, particularly at the base.

The animal had improved somewhat in condition.

Remarks.—The pasture, on which the cow had been grazing up to the time of the occurrence of the disease, contained roughly 40 per cent. clover, being made up of the following plants: *wild white clover, wild red clover, yellow suckling clover, birdsfoot trefoil,** Yorkshire fog, bent, fiorin, perennial rye grass, crested dogstail and weeds, notably thistle, ragwort, creeping buttercup, daisy, docks, plantains and wild mint.

The soil is of a calcareous nature.

From mid-April to June the weather was dry, with little rain and bright sunshine.

The original owner of the cow stated that he had sold her because he was overstocked, and in a subsequent court case, said that the cow had never been a moment unwell while in his possession; he had bought her as a yearling. He also said that no medicament of any sort had been applied to her back. This point was agreed on by the second owner.

Other cattle on the same pasture were not affected in any visible manner. These varied in colour from roan to red and white. It has been stated that the disease appears in perhaps one animal out of a number and that the affected animal probably possesses a certain physiological make up.[1] Udall calls the condition "light sensitization" and gives as synonyms "clover disease," "trifoliosis," "photosensitization," etc.[2]

From the conditions, history, lesions, etc., I diagnosed the disease as photosensitization, due probably to some agent ingested in the clover, and the subsequent action of sunlight on weakly pigmented skin.

Much useful information was obtained from Professor A. F. O'Dea, M.R.C.V.S., D.V.S.M., of the Veterinary College of Ireland, and from Mr. M. Crawford, M.R.C.V.S., of the Imperial Bureau of Animal Health, Weybridge.

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[Since writing the above, I have seen another case in a red bullock which, seen early, showed all the typical symptoms of photosensitization.]

* The plants italicised are stated to be incriminated in causing photosensitization.

ABSTRACTS

[On the Etiology of Epizootic or Infectious Equine Abortion. HENNING, M. W. (1946.) *Onderstep. J. vet. Sci.* **21**. 17-40.]

An organism of the Salmonella group was incriminated as a cause of abortion in mares in 1893. During the 1930s a virus which caused abortion in mares was described. The authors describe outbreaks of contagious abortion in South Africa and emphasize the unsatisfactory nature of the evidence indicating that *S. abortus equi* is primarily responsible for abortion in mares. They readily produced abortion in horse and donkey mares by means of filtered (bacteriologically sterile) and unfiltered suspensions of infected foetal organs, but not with large doses of *S. abortus equi* culture. It is known that horses may be carriers of *S. abortus equi* and it is suggested that the virus is the primary aetiological agent in all outbreaks of infectious abortion and that the bacterium plays much the same role as *S. cholerae suis* in swine fever or *H. influenzae suis* in swine influenza.

J. F.

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[Ovine Paratuberculosis (Johne's Disease of Sheep). TAYLOR, A. W. (1945.) *J. comp. Path.* **55**. 41-44.]

Within recent years Johne's disease has been diagnosed in sheep from most of the border counties of Scotland and also from the Lothians, Lanark and Sutherland.

The clinical signs are those of a severe debilitating disease. The animal loses condition, the wool is loosened, emaciation develops and death generally supervenes within two to three months. Diarrhoea is a remarkably inconstant symptom and may not be observed although often present intermittently. Diagnosis during life may not be easy; numerous acid-alcohol-fast organisms conforming to typical *Myco. johnei* may be present in the faeces, but the number may not always be sufficiently large to warrant a definite diagnosis.

From studies of cultures it was apparent that Johne's disease in sheep could be caused by either of two closely allied but different organisms. The first is probably identical with the organism causing Johne's disease in cattle; the other organism (the ovine type) is closely related but grows, if at all, much more slowly than the bovine type in artificial culture. Calves can, however, be infected with the ovine type of *Myco. johnei.*

J. F.

REPORTS

[Southern Rhodesia. I.—Report of the Chief Veterinary Officer for the Years 1941-45 and 1946; II.—Report of the Director of Veterinary Research for the Years 1942-45.]

I.—The reports, one for each year 1941–1945, are published under one cover and include the usual information in relation to disease problems and statistical information in regard to importation and exportation of livestock, export of frozen meat and Liebig's products, etc.

The report for 1946 is submitted separately. Staff shortage, acute enough during the war years, did not improve during 1946 and there was but little response to advertisement for veterinary surgeons. Seven vacancies remained unfilled. Recommendations for improved conditions of service had been made with a view to attracting suitable men. The position in regard to Animal Health and Meat Inspectors was much the same and there was a grave lack of senior and experienced Inspectors.

Early promise of a good stock year during 1946 was not maintained and the lateness of the arrival of the rains at the end of the year made matters serious.

From the disease point of view, except for widespread cases of lumpy skin disease, the position was regarded as bright, but there was some further spread of African Coast fever. No other serious outbreaks of scheduled diseases occurred.

* * *

II.—This report consists of four separate reports, under one cover, one for each year under review. In general, owing to staff shortage, the major work consisted of routine laboratory diagnosis, as essential service. Pregnancy diagnosis by the Cuboni chemical test was a routine activity. Vaccine preparation and issue, distribution of various remedies for disease treatment or parasitic control and the immunization of imported livestock represented other routine activities. There was little time for planned research but urgent and adventitious problems were tackled as and when feasible.

S. A. E.

Questions and Answers

The submission of questions for inclusion in this column will be welcomed: they can relate to any aspect of veterinary work. For purposes of record, each question is numbered, and those submitting questions are required to furnish (not for publication) name and address.

Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.
All communications should be addressed to the Editor.

Inoculation of Mare to Induce Joint-ill Prophylaxis in Foal

Q. CCXI.—*I should be glad to receive information regarding the following, namely, is there any known preparation which can be inoculated into a pregnant mare to prevent a foal becoming affected with joint-ill?*

A.—Joint-ill in foals, while rarely a mixed infection, may be caused by a variety of organisms:—

(1) Streptococci—40 to 50 per cent. of cases.
(2) *Shigella viscosa*—25 per cent.
(3) *Escherichia coli*—25 per cent.
(4) *Salmonella abortivo-equinus*—5 per cent.
(5) *C. pyogenes*, etc.—5 per cent. (Gaiger and Davies).

It will therefore be appreciated that any preventive treatment is bound to be largely empirical. Belin (1943) reports good results following vaccination of the mare at two months and one month before foaling with a mixed vaccine prepared from strains of Salmonella, Escherichia and streptococci. Scott (1917) and Lesbouyries (1945) make similar observations with regard to *Shigella viscosa*. A number of commercial firms prepare multivalent vaccines on these lines, which are well worth a trial. It must be emphasized, however, that one strain, particularly in the Escherichia group, will not always confer an immunity against infection by another strain, and that therefore strict antiseptic precautions must still be observed at the birth of the foal.

. . . . .

Synthetic Oestrogens in the Caponizing of Cockerels

Q. CCXII.—*Can you give me any information regarding the use of stilboestrol on young cockerels in lieu of caponizing the birds by operation, and to have the same effect? Is there any possibility of giving the stilboestrol by subcutaneous implantation, as in cattle, to avoid repeated injections?*

A.—The effects of oestrogen administration on the fattening of poultry derive not only from the feminizing action of oestrogens on the male, but also from their activity in accelerating the storage of fat by both sexes, so that they may be applied to the fattening of poultry generally. Although administration by pellet implantation may be employed, the undesirability of oestrogen residues in the finished carcase necessitates the removal of implants and limits the value of this method. Recent investigations have been directed to an examination of the possibilities of oral administration. Diethyl stilboestrol dissolved in soya bean oil or combined in a powder with calcined ferric oxide and fed in mash at a rate of 1 mgm. per bird per day over a three- to four-week period has been reported as giving economically worth-while results by some workers, but other investigators have been unable to detect any significant improvement in the fattening quality of birds fed up to 50 mgm. diethyl stilboestrol daily and it appears probable that stilboestrol is considerably less effective given by the oral route than when injected or implanted. Reports from America indicate that the dimethyl ether of diethyl stilboestrol (dianisylhexene) is a much more effective oestrogen when administered orally dissolved in soya bean oil and fed at a level of 30 mgm. to 50 mgm. per lb. of mash for a period of three to four weeks. As the effects of oestrogen administration are not maintained after withdrawal, feeding should be commenced three to four weeks before the birds are to be dressed.

Overdose or prolonged administration may result in sickness and death from lipaemia and calcaemia. *Post-mortem* changes noted include a chocolate-coloured blood, an increase in coagulation time, a brilliant canary yellow coloration of the serum with the separation of a layer of fat on standing and haemorrhages into the kidneys and intestinal walls.

. . . . .

Correspondence

Q. CCIX.—The "Second Cleansing"

Sir,—In answering this question your correspondent deals with acetonaemia and gives some enlightening facts concerning the biochemistry of the condition. The generally accepted fact, reiterated in this reply, that it does not occur under natural grazing conditions, is being disproved in my practice. I have had three cases during the past ten months—one last September, one in May of this year and another this week. Two occurred in Jersey cattle and the other cow is a Shorthorn.

Further "odd" cases crop up from time to time; the susceptible post-parturient anoestrus period is the normal one for the majority of straightforward cases, but I have encountered it in a dry Jersey cow a fortnight *before* calving and complicated by acute mastitis of one quarter—this case occurred in May of this year at grass and is referred to above—and I have met it also in a Jersey which had regained its normal oestrous cycle, and where recurrent attacks were experienced at the onset of each oestral period.

The time is opportune, I feel, for the pooling of our experience in the field, and for the publication in your columns of an out-to-the-minute survey of this condition, embracing the known facts of its biochemistry, pathogenicity and possible aetiology together with a comprehensive review of all known treatments, simple and complicated!

Yours faithfully,
T. A. R. Chipperfield.

"Fairfield,"
Crowborough Hill,
Crowborough.
July 26th, 1947.

. . . . .

Sir,—In "Questions and Answers" of July 19th, it was said of acetonaemia that "this disease does not manifest itself . . . after cattle are turned out to grass in the summer."

This unqualified statement may be misleading and I should like to point out that, as stated by Udall, acetonaemia occurs "in each month of the year and in both stabled and pastured animals."

On the same day that I read your contributor's answer I saw a Friesian cow which had been at grass since having her sixth calf in April. The history was that she had "had a fit" early that morning.

Both her urine and milk were positive to Rothera's test for acetone, the reaction being of such a strength as to be, in my opinion, of clinical significance.

Three days later I saw a Shorthorn cow due to calve within a few days. She was stated to be dull and "standing about." Her urine was Rothera's positive, although not strongly so. When seen two days later she was alert and feeding well. Her urine was completely negative to Rothera's test.

Yours faithfully,
E. A. Gibson.

49, Endless Street,
Salisbury.
August 3rd, 1947.

ANIMAL DISEASES RESEARCH ASSOCIATION

The Annual General Meeting of the Animal Diseases Research Association was held at Moredun Institute, Gilmerton, Edinburgh, on July 16th. The President, Mr. G. G. Mercer, C.B.E., presided, and with him were associated the Honorary President, the Duke of Buccleuch and Queensberry; and Mr. Alex. McCallum, O.B.E., Vice-President of the Association.

Dr. Russell Greig, Director of the Institute, in reviewing the work, dealt particularly with scrapie and louping ill. He recalled that, a year ago, the cause of scrapie had been definitely determined by the Institute as a filtrable virus and said that experiments were in progress for the purpose of discovering in which tissues of the sheep the virus was most highly concentrated. The ultimate objects of the work would be, if possible, the development of a protective vaccine, and of a specific diagnostic blood test.

Information had been received that a disease very similar to grass sickness in horses had occurred in Sweden and in Denmark. In company with two of his colleagues, Dr. Wilson and Dr. Stewart, Dr. Greig had just returned from a visit to these countries. The disease in Denmark occurred under very definite conditions among horses summer grazed on an island consisting of old permanent pasture. The disease appeared to be indistinguishable from grass sickness in Scotland and the work would be further developed in collaboration with their Scandinavian confrères.

Sir Patrick Laird, Secretary to the Department of Agriculture for Scotland, spoke of the continued high standard of the work at Moredun Institute and of the valuable help afforded by Dr. Russell Greig, with whom they were in close association.

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Herts County Agricultural Committee have asked the Minister of Agriculture, "in view of the very serious danger to the health of the community likely to result from the extensive pollution of the River Lea," to consider the immediate need for intensive research into the problem of rendering sewage available for land fertilization.

QUESTIONS IN PARLIAMENT

Ministry of Agriculture's Staff (Salaries)

In the House of Commons on Wednesday of last week Sir T. MOORE asked the Minister of Agriculture whether, in view of the misunderstanding which exists with regard to recent salary increases for the veterinary staff of his Department he will arrange for an explanatory statement in this connection to be made available for publication in *The Veterinary Record*, so that the full facts may be available to all members of the veterinary profession in this country.

Mr. COLLICK: Within the next few days I will send to the hon. and gallant Member an explanatory statement which can be made available for publication in *The Veterinary Record* or elsewhere.

Sir T. MOORE: Will the hon. Gentleman publish the statement so that members of the veterinary profession will know where they stand, and in order that the discrepancies which obviously occur may be explained?

Mr. COLLICK: As I have indicated, we shall send it to hon. and gallant Gentleman, and if the parties concerned publish it, that is their responsibility, as I am sure the hon. and gallant Gentleman would agree.

In the previous question Sir T. MOORE asked the Minister of Agriculture how many officers of the Animal Health division of his Department have now received increases in salary equivalent to 30 per cent. to 45 per cent. of their pre-war scales; and whether, in arriving at these figures, the bonus additions to basic rates have been included or excluded.

Mr. COLLICK: All the professional officers of superintending inspector rank and below who were employed in the Department at the outbreak of war are paid on scales which have been increased from 30 to 45 per cent. over their pre-war scales. The question of bonus additions no longer arises since the staff are paid consolidated salaries.

. . . . .

Prior to the rising of the House of Commons for the Summer Recess, the following further questions were among those dealt with:—

FEEDING-STUFFS

Mr. TURTON asked the Minister of Food in view of the critical situation what steps he is now taking to increase purchases of feeding-stuffs in order to stimulate meat, milk and egg production in this country.

Mr. STRACHEY: We have already succeeded in buying much more feeding-stuffs than we were able to get last year. As the House knows this has already enabled my right hon. Friend the Minister of Agriculture to increase the livestock rations. We shall buy more feeding-stuffs as they are available. We are also taking very active steps to get the quantities already bought shipped to this country, which has been a difficult matter.

Mr. TURTON: Is the Minister aware that to enable agriculture to respond to the Prime Minister's appeal, it is essential that he should be more successful than in the past in purchasing feeding-stuffs or, alternatively, to hand it over to private enterprise?

Mr. SPENCE: Can the Minister say whether arrangements have now been made to secure the 500,000 tons of wheat offals from Canada arising from our wheat agreement with her, in that we take so much of it in flour? Has that been secured?

Mr. STRACHEY: No, Sir. By far the greater part of the wheat under the Canadian wheat contract, comes here in the form of wheat, not flour, and the offals are, therefore, available.

Major Sir THOMAS DUGDALE: Does the Minister realize that there is urgency in this matter, that the increase announced recently by the Minister of Agriculture does not touch the fringe of the problem, and that much more imports are required before we can get the pigs, bacon and eggs we require to reach the Prime Minister's target?

Mr. STRACHEY: I am sure that the whole Government realize that there is no more urgent problem for agriculture than this. Fortunately, larger quantities of feeding-stuffs are at last becoming available in the world, but the cereal shortage in the world is by no means over. We cannot get as much as we should like by any means.

MILK (OUTPUT STATISTICS)

Mr. J. L. WILLIAMS asked the Minister of Food the amount of milk output in Great Britain in 1938 and 1946, respectively, and the proportions used in each case for liquid consumption, manufactured foodstuffs and other manufactured goods.

THE MINISTER OF FOOD (Mr. STRACHEY): One thousand, two hundred and ten million gallons of milk were sold off farms in Great Britain in 1938 and 1,424 million gallons in 1946. Of these quantities 845 million gallons were used for liquid consumption in 1938 and 1,265 million gallons in 1946. Three hundred and sixty-five million gallons were manufactured into food products in 1938 and 159 million gallons in 1946. No whole milk was used for other manufactured goods but some eight million gallons of skim milk were used before the war in the manufacture of casein for industrial purposes.

Mr. WILLIAMS: Is my right hon. Friend aware of the widespread impression that a great proportion of milk is used to-day to manufacture such articles as buttons and umbrella handles, as in the case of 1938?

Mr. STRACHEY: I welcome the opportunity of saying that none is used for such purposes.

Major HAUGHTON: Do the figures the Minister has given refer to the quantities used in Great Britain or in the United Kingdom?

Mr. STRACHEY: I have "Great Britain" on my paper, but I will look into that.

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LIVING ANIMALS (EXPERIMENTS)

Mr. VIANT asked the Secretary of State for the Home Department how many persons held a licence for experiments on living animals under the Cruelty to Animals Act, 1876, during the year 1946; how many places were registered for such experiments; and how many visits were made to them by the inspectors.

Mr. EDE: 2,459, 460 and 726 respectively.

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TRANSPORT OF ANIMALS (REGULATIONS)

Mr. PETER FREEMAN asked the Minister of Transport whether he is aware that four greyhounds recently arrived in this country by steamer; that they were subsequently conveyed by rail on a 7½-hour journey on a very hot day; that one died on reaching its destination and another had severely lacerated its jaw in a vain attempt to remove its heavy leather muzzle; whether they received water or attention on the journey and what steps are taken to see that regulations providing for the proper treatment of animals in transit under such conditions are carried out efficiently.

THE PARLIAMENTARY SECRETARY TO THE MINISTRY OF TRANSPORT (Mr. G. R. STRAUSS): I regret that I am unable to give any answer without further details as to the date and port of arrival. If my hon. Friend will send me these particulars, I will make enquiries and let him know the result.

Mr. FREEMAN: In view of the number of cases of injury to animals in transit, is the hon. Gentleman satisfied with the regulations now in force, and where necessary, will he see that they are more efficiently carried out?

Mr. STRAUSS: As far as we know, the regulations are properly carried out, but I should be grateful to know of any incident such as the hon. Gentleman suggests, and I will go into it immediately.

NOTES AND NEWS

Diary of Events

Sept. 10th.—N.V.M.A. Committee meetings at 36, Gordon Square, W.C.1: Parliamentary and Public Relations 11.30 a.m.; General Purposes and Finance, 2 p.m.

Sept. 11th.—Ditto: Veterinary State Medicine, 10 a.m.; Organizing, 2 p.m.; Technical Development (running concurrently with Organizing), 2.30 p.m.; Home Appointments, 3.45 p.m.

Sept. 12th.—Meeting of Council, N.V.M.A., at the Connaught Rooms, Kingsway, W.C.2, 11 a.m.

Sept. 17th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1. (*Members are asked to note change from second to third Wednesday in the month, for this meeting only.*)

Sept. 23rd.—Meeting of the Southern Counties Division, N.V.M.A., at Blandford, Dorset (Crown Hotel). Full Notice will be given later.

"Unsatisfactory Status" of Veterinary Science and Personnel

Animal Disease Obstacle to Sound Agricultural Economy

Estimates Committee's Comments

In presenting to the House of Commons on August 5th its Third Report on the Estimates, the Select Committee who have examined the national expenditure on all classes of research and development, express much concern at—to use their own words—the continued incidence of several diseases which take a heavy toll of farm animals and thereby impose serious financial obstacles in the way of establishing and maintaining a sound agricultural economy in this country.

In the next paragraph (98) the Committee say: "The status of veterinary science is not as high as it should be. The veterinary profession still does not offer sufficient opportunities for first-class men, and those who are really interested in this field must accept an unsatisfactory status."

For members of our profession these are the outstanding features of a report (H.M.S.O. 1s. 6d. net), which, covering a vast field, declares that teaching and fundamental research should be first in Government scientific priorities, with civil science second. Ignoring of these priorities hitherto has created difficulties in the way of scientists being made available for research into certain important aspects of civilian life. Foremost amongst these is agriculture, yet agriculture and fisheries research in 1947–48 is allocated the meagre sum of £2,150,925.

In the task of securing an adequate status for, and recruitment of the right type of man to the veterinary profession, matters could be greatly improved if a serious drive were made to set higher standards of general education for entrants and to secure that veterinary students are brought into close and continuing contact with workers who are concerned with the advancement of knowledge in the broader fields of biological and medical research. This would have as a natural consequence the stimulation of more university and institutional research of a fundamental character in this and related fields.

The Research Programme

The Agricultural Research Council have as their special duty the oversight of all agricultural research in Great Britain, the co-ordination of this work, and the initiation of schemes for its development. Research on mastitis and on contagious abortion has been developed to a point at which considerable extension of the isolation facilities at the Council's Field Station at Compton is urgently needed.

The Ministry are directly responsible for investigations into foot-and-mouth disease at their institute at Pirbright, and animal health at their Weybridge laboratory. The workers at Pirbright conduct research under extremely trying conditions and expansion of the work is difficult, but it considered doubtful whether setting up another station would be profitable. The Committee were informed that the slaughter policy was the only possible one; that immunization was extremely difficult owing to the number of kinds of virus, and that other diseases, such as bovine tuberculosis, mastitis and contagious abortion imposed a heavier cost upon the country. They state that the evidence obtained gives little hope of a rapid advance towards the solution of the problem of foot-and-mouth disease. While realizing that there are great scientific difficulties facing those concerned with research into this disease, the Committee "cannot escape the impression that work upon it has not been conceived in the light of a practical working policy."

Dealing with the problem of the provision of scientific man-power generally, the need for a greatly increased output of trained scientists is undisputed, and the universities must remain the main source of supply. The Committee are disturbed by the impression they have gained that the conditions of Government service do not always create an atmosphere attractive to research workers or conducive to the achievement of scientific progress.

The greatest weight is attached to the full deployment of the financial resources made available for research. If it is to discharge its duty, Parliament needs to be provided periodically with comprehensive "progress" reports setting out the range, aims and progress of Government research activities.

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[We feel that the adverse conditions attending the prosecution of veterinary science which prompt the Select Committee to make the above comments represent a situation in which the Minister of Agriculture might well consider reviewing the status and salaries of his Veterinary Officers.—*Editor.*]

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R.C.V.S. Central Library for Animal Diseases

As previously intimated, the Central Library for Animal Diseases, 10, Red Lion Square, London, W.C.1, will be closed for readers from Monday, September 1st to the 15th, re-opening on Tuesday, September 16th.

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Reduction in Petrol Allowances

We reproduce below a letter received by the Association from the Ministry of Fuel and Power intimating a 10 per cent. reduction in the supplementary petrol allowances to veterinary surgeons for the six months' period October, 1947 to March, 1948.

While in cases of necessity practitioners may still have recourse to the Regional Petroleum Officer, the Association feels sure that all members will, as in the past, co-operate fully with the Minister in effecting the further saving in petrol necessitated by the present crisis.

Ministry of Fuel and Power.
Petroleum Division,
7, Millbank,
London, S.W.1.

August 9th, 1947.

Dear Mr. Knight,

As announced by the Prime Minister in the House on August 6th it has become necessary to make reductions in the levels of petrol rations and accordingly all supplementary allowances for private cars will be reduced by 10 per cent. as from October 1st. In common with all other categories of users a cut will be made in veterinary surgeons' allowances.

A reduction of 10 per cent. will, therefore, be made in respect of the next issue for veterinary surgeons, which will be for the six months' period October, 1947 to March, 1948. Whilst we hope that many of them will be able to achieve this saving, we realize that it will not be possible in all cases, and where a veterinary surgeon finds later in the period that he cannot manage on the reduced allowance the Regional Petroleum Officer will, of course, be prepared to deal with his appeal sympathetically and expeditiously.

A letter in the above terms is being sent to all veterinary surgeons with their issue of coupons but nevertheless Mr. Shinwell will be grateful for the assistance of the National Association in

impressing on all members the need for economy in petrol consumption and for their co-operation in achieving it.

Yours sincerely,

H. Lyons.

F. Knight, Esq.,
National Veterinary Medical Association,
36, Gordon Square,
W.C.1.

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R.C.V.S. OBITUARY

Cosgrove, Joseph Francis, Jun., Kildare, Eire. Graduated Dublin, December 18th, 1945. Died August 15th, 1947; aged 26 years.

Mr. Cosgrove, Jun., Fatally Injured by Mare

We record above with deep regret the tragic loss of a most promising young practitioner in Mr. Francis J. Cosgrove, Jun., who was fatally injured when he was kicked by a brood mare at Bishopsland, Kildare.

Mr. Cosgrove, who had arranged to go on holidays that day, was called to see the mare and he was giving an injection when she kicked out, striking him on the head. He was taken in an unconscious condition to Drogheda Memorial Hospital at the Curragh, where he was attended by his uncle, Dr. James Cosgrove, and Dr. Cannon, Kildare. A Dublin specialist was summoned, but Mr. Cosgrove died without regaining consciousness.

Aged 26, Mr. Cosgrove was the youngest son of Mr. Joseph Crosgrove, M.R.C.V.S., and Mrs. Cosgrove, Crotanstown House, Kildare, and brother of Mr. Maxie Cosgrove, M.R.C.V.S., Parnell Street, Dublin. He qualified in 1945, and in his final year received the Gold Medal for surgery.

He was a well-known amateur rider and a keen rider to hounds. He was vice-captain of Cill Dara Golf Club, and the links were closed as a mark of respect during the funeral.

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Morgan, Philip Sydney, M.B.E., Major, R.A.V.C. (T.F.) (retd.), Monkton, Ashfield, Ross-on-Wye. Graduated London, July 19th, 1907. Died August 14th, 1947; aged 64 years.

Mr. S. P. Morgan, M.R.C.V.S.

Mr. Sidney Philip Morgan, of Monckton, Ashfield, Ross-on-Wye, whose death occurred suddenly at his home, was one of the most prominent veterinary surgeons in South Herefordshire. A practitioner of 35 years' standing, he was a keen golfer, and a member of the Ross Harriers Hunt.

He leaves a widow, two sons and a daughter, to whom deep sympathy is extended.

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GENERAL OBITUARY

Mrs. M. Stirling Webb

We learn with much regret of the death of Mrs. Margaret St. Clair Stirling Webb, wife of Lieut.-Colonel G. M. Stirling Webb and daughter of Dr. W. M. Scott, F.R.C.V.S., F.R.S.E., and the late Mrs. Scott, which took place at Fryern Hall, Bridgwater, at the end of last month, after a long illness.

At the outbreak of war in 1939, Lieut.-Colonel Stirling Webb was in Malaya and became a prisoner in Japanese hands. Anxious to bring her two daughters home to be educated, Mrs. Stirling Webb decided, in 1944, to risk the dangers of the sea. They returned in a troopship attached to the first convoy to sail in the Mediterranean.

A distinguished general's tribute to her when she left India was: "Peggy Webb's charm and personality has capitivated all of us; we shall always love her and in our hearts we shall always sincerely remember her."

The funeral, by request, was private. Lieut.-Colonel Stirling Webb being with his regiment in India, was unable to be present.

Nixon.—On August 16th, 1947, at 9, Hartington Road, Sheffield, dearly loved wife of Sidney H. Nixon, M.R.C.V.S.

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PERSONAL

Senator Parkinson Retires.—We learn with regret that, owing to ill-health, Mr. James J. Parkinson, M.R.C.V.S., of Maddenstown Lodge, Co. Kildare, has resigned from the Seanad on which, as a foundation member, he has rendered long and valued service. Notifying the House that he had received a letter from Mr. Parkinson announcing his decision, an Cathaoirleach said that he would express their regret to him and wish him a speedy recovery.

The *Irish Independent* states that Mr. Parkinson has been in indifferent health for some time, during which he has been unable to attend the House. He has been a member since the House was founded, and since elections on a vocational basis were introduced has been elected on the Cultural and Educational Panel.

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LEGAL NOTES

Castration Sequel: Farmer Imprisoned for Cruelty.—At Cambridge Divisional Court on August 2nd Cyrus Luther Gautrey, a Rampton farmer, was sentenced to three months imprisonment for performing an operation on a two-year-old pony "without due care and attention."

In evidence, Inspector Turner, of the R.S.P.C.A., said the operation had been performed in a crude and unskilful manner, and when he saw the pony its condition was such that witness thought a veterinary surgeon should see it at once.

The Inspector added that he found that the clamps used in the operation had been tied each end with ordinary string and there was a quantity of blood on them. He was present at a Cambridge slaughterhouse when the pony was destroyed, a week after Gautrey performed the operation. There was a swelling the size of a football.

Mr. F. G. Lawfield, M.R.C.V.S., stated that the incisions had not been made sufficiently large to enable the chords to be replaced without a large amount of force. If done properly, the operation should not involve any large degree of haemorrhage, which ought not to have persisted 32 hours afterwards.

He was shown a clamp and a knife, in court, and said he personally would have used neither. The latter could be used, but was not very good.

In reply to the Chairman, witness said the subsequent inflammation which developed in the pony was due to ineffective drainage and damage to the tissues during the operation.

On oath, defendant said he had been a farmer for 24 years, and during the 1914-18 war he served in a mobile veterinary section of the army. While a prisoner of war in Germany he had considerable experience of castrations and all kinds of operations on horses.

The Magistrates found defendant guilty and after hearing his record the Chairman (His Honour Judge W. Lawson Campbell) told him: "You have been convicted to-day for conduct which any ordinary person can describe as brutal and inhuman. That you did behave in this way, there is no doubt in the minds of anyone who has heard the history of what happened to this unfortunate animal.

"If it were the first time, one might imagine that you had acted partly through ignorance but in view of your record it is quite impossible to take that view. This Bench is determined that you shall be given a lesson, which we hope will be effective in preventing you from behaving in this way again. We hope, too, that it will be a lesson to others, if there be any who are like-minded, and a warning to people who behave in this manner towards animals entrusted to their care that they will meet with severe punishment."

Inspector Blows had reported that Gautrey was fined £5 in 1934 for cruelty to a calf; £3 in 1935 for cruelty to a cow; £20 in 1936 for causing unnecessary suffering to two horses; and £20 in 1943 for causing unnecessary suffering to a cow.

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A.I. PROGRESS IN SHROPSHIRE AND NEIGHBOURING AREAS

In our issue of August 2nd we recorded the remarkable expansion in the artificial insemination service which stands to the credit of the Hampshire Cattle Breeders' Society.

Considerable headway has also been made by the Milk Marketing Board's A.I. Centre at Cheswardine, Salop. This Centre opened on January 1st, 1946, and Sub-Centres were established at Ellesmere and Bridgnorth in the latter part of the year. 6,131 cows were inseminated during the year, the conception rate being 65 per cent., and the membership was 785. Sub-Centres were opened at Welshpool and Dorrington early this year, and for the first six months of 1947, 13,871 cows were inseminated, including 2,347 first inseminations for the month of May; the membership increased to 1,532. Ayrshire, Friesian and Shorthorn bulls are kept at the Centre, and semen from less numerous breeds is obtained from other Centres.

Mr. Kerry O'Sullivan, M.R.C.V.S., manager of the Cheswardine Centre, reports that it is hoped that Welshpool will soon be a main Centre with Dorrington as a Sub-Centre. All of Shropshire, the western part of Staffordshire, south of Cheshire, all of Flintshire (detached), and parts of Denbighshire and Montgomery have A.I. coverage Figures from other Board Centres show a similar trend, and there would now appear to be no doubt about the future success of A.I.

VETERINARY EDUCATIONAL TRUST

Canine Research Station at Newmarket

Mr. S. F. J. Hodgman, M.R.C.V.S., Bromley, Kent, will be taking up his duties as Director of Veterinary Educational Trust's Canine Research Station on September 1st. This new station, the first of its kind in the world, is to be situated on property adjoining the Equine Research Station, already organized by the Trust at Balaton Lodge, Newmarket.

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Poultry Diseases Exhibit at Blackpool

The Trust will be well represented at the "Country Comes to Town" Exhibition which is being staged in Stanley Park, Blackpool, from August 20th to September 6th. On stand No. 104, the Fund will display a special exhibit relating to poultry diseases, particularly fowl pest, including *post-mortem* findings; the latest advice upon how to act when an outbreak is suspected also will be featured. There will be photographic representation of other common diseases of poultry including fowl pox, coccidiosis, bacillary white diarrhoea and tuberculosis.

Many photographic studies of disease symptoms and of *post-mortem* findings with suggestions as to control measures, are being lent to the Veterinary Educational Trust by the Ministry of Agriculture, whose literature on the subject of fowl diseases will be obtainable by visitors.

Several members of the Liverpool University Veterinary Students' Union are assisting in the supervision of the stand.

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Mr. William Simpson, Manor House, Chenies, Rickmansworth, has offered to run a show and gymkhana in aid of the Veterinary Educational Trust. Mrs. Simpson may also hold some dances on behalf of the Trust during the winter.

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WINTER RATIONS FOR LIVESTOCK

In a joint announcement the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland say that the expected increase in supplies of feeding-stuffs during the coming winter will enable basic rations for pigs and poultry to be improved and rations for dairy cows to be maintained at the rates operating in the later months of last winter. A ration will also be available for mountain ewes which may require feeding at lambing time in severe weather. The substantial improvement in basic pig and poultry rations has been made possible largely by increases in the supply of cereal feeding-stuffs. Supplies of oil-cakes and other protein feeding-stuffs have not improved to the same extent owing to the continued world shortage of oilseeds.

An early and substantial increase in production of eggs and pig meat is necessary alike in the interests of good farming, of the national diet, and of conserving foreign exchange. In particular more pig meat is vital in present conditions of world meat shortage. Supplies of feeding-stuffs are still not large enough to permit the rationing scheme to be extended to holdings not registered as having maintained pigs and poultry in 1939 or 1940 but the improved ration scales should encourage producers eligible for rations to expand still further their breeding programmes and production plans. The Government will not relax its efforts to secure further increases in feeding-stuffs supplies as and when this becomes possible, but it remains as essential as ever for farmers to plan for a higher standard of self-sufficiency in feeding-stuffs than obtained before the war. This applies particularly to protein-rich crops such as linseed.

Following are brief particulars of the winter rationing arrangements for the principal classes of stock.

Dairy Herds

Milk Production Rations.—Rations during the winter months (October to April inclusive) will again be based on milk sales two months previously. (The alternative basis, *i.e.*, milk sales 14 months previously, which was introduced to meet the special circumstances of last winter, will not apply this winter.)

The monthly allowance will be 1 unit of protein and 3 units of cereal for each 105 gallons of milk sold in excess of 15 gallons per cow per month, subject to a deduction of 60 lb. of cereal per cow per month. Thus farmers are expected to provide maintenance for their dairy herds, together with protein for the first half gallon, and cereals, *i.e.*, feeding grains or their cereal equivalent in other fodder crops, for approximately the first 1½ gallons of milk per cow per day.

Supplementary Dairy Rations.—Supplementary allowances for dairy cows will be available only to the extent permitted by the quantities available from the Agricultural Executive Committee's discretionary reserves, which are strictly limited. It may not be possible to meet a farmer's needs in full, and in general the assistance that can be given will have to be confined to the waiving in whole or in part of the monthly cereal deduction of 60 lb. where essential crops have been grown. Only in exceptional cases and to a very limited extent will assistance be possible to provide protein or cereal for the maintenance of the cows or production of the first half gallon of milk.

Calves under six months.—For each calf up to the age of six months being reared for milk or beef production the allowance will be ½ unit of calf food per month. This allowance will not normally be made where the owner is not selling milk.

Working Horses

Rations on the same scale as in previous winters will be allowed for working horses only where insufficient home grown oats are available. The allowances vary according to the type of horse and the nature of its work.

Commercial Pigs and Poultry

Basic Rations.—For the months September/April inclusive basic rations at the rate of one unit per pig and one unit per 20 poultry per month will be allowed for up to one-fifth of the registered numbers of pigs and poultry kept on the holding in June, 1939, or December, 1940, subject to a deduction at the rate of one pig for each 64 acres and three poultry for each 16 acres of the holding. This scale is a substantial improvement on the current scale of one-sixth of registered numbers with an acreage deduction of one pig per 16 acres and three birds per four acres and still more so on last winter's scale of one-eighth of registered numbers with an acreage deduction of one pig per eight acres and three birds per two acres.

Farrowing Sows.—During the winter the allowance made on application in respect of each sow or gilt about to farrow will continue at the current rate of 8 cwt. per sow. This allowance is not available to domestic pig-keepers.

Hatcheries.—Hatcheries rationed on the basis of their purchases of feeding-stuffs in 1939 will receive monthly rations from September 1st limited to a quarter of the purchases in the corresponding month of 1939.

Chick-rearing rations for replacement purposes.—Chick food coupons will be available during January-April, 1948, at the rate of 1 cwt. for each 40 birds shown in the Agricultural Return at June 4th, 1947, where at least 26 birds were so returned. These rations are not available to domestic poultry-keepers or poultry-keepers holding a Small Poultry-keeper's ration card, or to hatcheries rationed on the basis of pre-war purchases of feeding-stuffs.

Other Pig and Poultry rations.—Rations for other classes of pigs and poultry, *viz.*, pedigree pigs, premium boars and sound poultry breeding stock, will remain at the rates operating this summer. Rations for sound poultry breeding stock will be based on the numbers ascertained at the autumn, 1947, inspections.

Coupon Ratio.—Coupons for pigs and poultry will be issued in the proportion of one protein: nine cereal.

Domestic Poultry, Pigs and Pig Clubs

There will be no change in these rations, which will continue at current rates.

Mountain Ewes

A farmer who qualifies for the Hill Sheep subsidy may be allowed coupons at the rate of one unit per 20 mountain ewes, if he is unable to provide the extra feeding which, on account of bad weather, may be required at lambing time. This allowance may, on application, be issued in advance to farmers whose farms are likely to be isolated in severe weather, in order that they may purchase the feeding-stuffs for holding in reserve.

Other Classes of Stock

Rations for other classes of stock for which specified ration scales were in operation last winter, *e.g.*, bull calves in officially milk recorded or pedigree dairy herds, premium bulls being used for service, goats, pedigree ram lambs, etc., will be on the same scale as last winter.

Discretionary Reserves

Issues may be made at the discretion of Agricultural Executive Committees, from such reserves of protein and cereal as it is found possible to place at their disposal, to certain classes of stock in case of need. A large proportion of these limited reserves will, as indicated above, be required for making supplementary allowances in respect of dairy herds. This applies especially to certain areas where there is special difficulty in attaining the standard of self-sufficiency required under the scheme. The issues, especially of protein, that it will be possible to make in respect of other classes of stock, may necessarily have to be small and limited to cases of acute need.

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THREE WAYS TO STOCK IMPROVEMENT

Reporting on the educational exhibits staged by the Welsh Division of the Agricultural Advisory Service at the Royal Welsh Show, the *Farmer and Stock-Breeder* observes that livestock improvement as applied to dairy cows was shown to be possible along three different ways. The first was by the use of a proven sire, the veteran twelve-year-old Dairy Shorthorn bull, Kilsant Monarch, who was shown with several of his progeny, being used to illustrate this method. The higher milk yields of the daughters, compared with their dams, that were got by him bearing testimony to the effectiveness of this method.

A bunch of British Friesians was on view to show the second method, grading up to pedigree, useful where the initial cost of buying in pedigree stock is considered too high. Here again the better milk yields in each succeeding generation told their own story.

The native breed of cattle, Welsh Blacks, which do particularly well on the high marginal land which covers such a large area in Wales, were brought in to illustrate line breeding as a means of establishing type and increased performance, the breed's potentialities being clear from the fact that there are 1,000-gallon strains of Welsh Black cattle already established in some herds.

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Council of the Essex Pig Society have decided that as from next year all pigs entering for their shows and sales must be tuberculin tested. The Society's show and sale at Chelmsford, September 2nd, will include 35 boars and 100 gilts, a large proportion of which have been inoculated with crystal violet vaccine.

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

SWINE FEVER:

Berkshire.—Nautical College Farm, Pangbourne, Reading, Berks. (Aug. 15th).

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H.M. STATIONERY OFFICE PUBLICATIONS

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office.

	Price net s. d.	*Post free* s. d.
HOUSE OF COMMONS PAPERS (Session 1946-47):		
127. Colonial Development and Welfare Act. Return of Schemes made under the Act by the Secretary of State for the Colonies with the concurrence of the Treasury in the period from April 1st, 1946, to March 31st, 1947	1 0	1 2
HOUSE OF COMMONS BILLS (Session 1946-47):		
115. Agriculture (Scotland)	1 6	1 8

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BOVINE TUBERCULOSIS IN THE LUNGS

"The part played by the bovine tubercle bacillus in the causation of non-pulmonary tuberculosis has been studied by several workers in Great Britain, Scandinavia, Germany, and the United States, and is now fairly well defined," states *The Lancet* in an annotation published in the issue of May 31st, which continues: "It is known, for example, that in England and Wales about 30 per cent. of all cases of non-pulmonary tuberculosis are due to infection with the bovine type; and much the same proportion holds true for Denmark. The findings of the Royal Commission, and later of Stanley Griffith, that only about 1 per cent. of cases of *pulmonary* infection were due to the bovine type led to the conclusion that, for all practical purposes, this organism could be ignored as a cause of human phthisis. This belief was generally held for many years, and was not seriously challenged till W. T. Munro in Scotland and B. Lange in Germany reported a considerably higher proportion of bovine strains. Further observations showed that bovine pulmonary infections were much commoner in Scotland than in the south of England, where most of Griffith's early studies had been made, and that they were commonest of all in the north-eastern region of Scotland. Work by K. A. Jensen and his colleagues in Denmark added weight to these conclusions, since, in a study of 3,708 strains of tubercle bacilli from cases of pulmonary tuberculosis, the bovine type was found to comprise 5·3 per cent. The question then arose: how does the bovine tubercle bacillus reach the lungs? Griffith and Munro leaned towards the view that in these cases pulmonary tuberculosis was a late manifestation of a previous glandular infection contracted *via* the alimentary tract. Lange, on the other hand, finding a high proportion of his cases among farm workers, was inclined to attribute infection to direct inhalation of contaminated dust.

"Fresh light is thrown on this problem by the studies in Denmark of Sigurdsson.[1] As he concentrated exclusively on pulmonary tuberculosis his patients were nearly all adults. In his first study he collected information on 566 strains of tubercle bacilli that had been sent for examination between 1932 and 1940 to the State Serum Institute at Copenhagen; of these, 91 (16·1 per cent.) proved to belong to the bovine type. Studying the origin of these strains, he found that 67 (40·6 per cent.) were derived from the 165 patients who had been living during the two previous years in country districts, 11 (28·2 per cent.) from the 39 patients who had spent part of their time in the town and part in the country, and only 13 (3·6 per cent.) from the 362 patients who had been living under urban conditions. Further analysis revealed that, among the 67 rural patients infected with the bovine type, 63 had been recently in contact with strongly tuberculous herds of cattle, four with herds containing healthy reactors, and none with only tuberculosis-free herds. These observations suggested very strongly that close contact with tuberculous cattle was the chief condition responsible for the development of bovine pulmonary tuberculosis in man.

"Milk-borne infection, however, seemed to be largely ruled out, for three reasons: firstly, the clinical features were those of primary lung disease, not those of an alimentary infection; secondly, the younger children, who drank milk but who were not in close contact with infected cattle, did not develop pulmonary lesions; and thirdly, pulmonary tuberculosis in adult rural workers who were not living on infected farms but who were exposed to milk-borne infection from these farms was uniformly due to infection with the human type.

"Following up this work, Sigurdsson surveyed the population of a rural parish (Grimstrup) in the county of Ribe, to determine the incidence of tuberculous infection. No fewer than 680 out of the 745 persons in the parish submitted to examination, which included a tuberculin test, radiography of the chest, and bacteriological investigation wherever pulmonary tuberculosis was suspected. For purposes of analysis the subjects were divided into three groups, according to whether they had been in contact with strongly tuberculous herds, apparently healthy reactors, or only tuberculin-negative herds. In the first group 4·8 per cent., in the second group 2·8 per cent., and in the third group none, showed evidence of pulmonary tuberculosis (not necessarily active). A second survey was carried out on 100 families living on farms where there was a large amount of tuberculosis in the cattle and on 100 families living on farms where all the cattle were tuberculin-negative. In the former group 3·0 per cent. of persons showed evidence of pulmonary tuberculosis, and in the latter group only 0·3 per cent.

"The general conclusion reached from these results is that in Denmark pulmonary tuberculosis of bovine origin is mainly due to close contact with tuberculous cattle, and that infection is contracted by inhalation rather than ingestion."

1. Studies on the Risk of Infection with Bovine Tuberculosis to the Rural Population, with Special Reference to Pulmonary Tuberculosis. By Jón Sigurdsson. London: Oxford University Press. 1945. Pp. 250. 15s.

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In far too many instances the public show standard is largely artificial and has little behind it but the reputation (even that is a little doubtful sometimes) of the exhibitor and a deal of glamour.—*Scottish Farmer.*

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

Correspondents should write as briefly as possible and letters should not exceed 350 words.

NON-RECEIPT FOR PUBLICATION OF PROCEEDINGS OF COUNCIL, R.C.V.S.*

Sir,—A large number of members of the R.C.V.S. take a deep interest in the administration of the profession, both by the N.V.M.A. and the Royal College. In this connection it is disquieting to note that no regular record of proceedings of Council, R.C.V.S., has been published since the appearance of reports of the special meetings on Veterinary Education held in November, 1945, and in January, 1946. There is a feeling that, while steps are surely being taken to implement the main proposals of the Loveday Report, the profession is not being kept informed of them.

Yours faithfully,

PAUL CROSFIELD.

* Our heading.—*Editor.*

Revision of Rates for Classified Advertisements

The attention of those concerned is directed to the announcement, appearing on advertisement page vi of this issue, in which are detailed new rates for the insertion of classified advertisements in *The Veterinary Record.*

The introduction of these increased charges—also of an addition to the Box Number fee—has been decided upon, with regret, as one of the measures essential to meet the very heavy increase in the cost of printing the journal of the Association.

The new rates specified will be payable in respect of all professional and other "small" advertisements published in the September 6th and subsequent issues.

Alterations, as notified direct to advertisers, also will be made in the rates for "display" announcements.